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10/721,124	11/25/2003	Ronald S. Cok	87090AJA	6179

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EXAMINER	
DINH, DUC Q	

ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/721,124	COK, RONALD S.	
	Examiner	Art Unit	
	DUC Q. DINH	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/20/04,6/2/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is response to the Application filed on November 25, 2003. Claims 1-24 are currently pending and being examined.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-24 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-27 of copending Application No. 10/355,922. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

Claims of the current application 10/721,124	Claims of the copending application 10/355,922
1). A method for controlling aging compensation in an OLED display having one or more light emitting elements comprising;	8). A method of driving an OLED display having a plurality of light emitting elements having outputs that change with time or use, comprising the steps of:
the steps of periodically measuring the change in display output to calculate correction signal;	a) **dividing the light emitting elements into two or more groups**;
restricting the change in the correction signal at each period; and	b) measuring the total current used by a group of light emitting elements; and
applying the correction signal to the OLED display to effect a correction in the display output.	c) calculating a correction signal based on the **measured total current for the light emitting elements in the group** and applying the correction signal to input image signals to produce corrected input image signals that compensate for the changes in the output of the light emitting elements of the group.
2). The method claimed in claim 1 wherein the measurement is one or more **measurements from the group including a light output of one or more of the light emitting elements**; a current used by one or more of the light emitting elements...	
3). The method claimed in claim 1 wherein the correction **is restricted to be monotonically increasing.**	20). The method claimed in claim 8, wherein the correction signal is **restricted to be monotonically increasing.**
20). The method claimed in claim 1 wherein the corrections maintain **a constant average luminance output for the display over its lifetime.**	22) The method claimed in claim 8, wherein the correction signal is calculated to maintain **a constant average luminance output for the display over its lifetime.**
21. The method claimed in claim 1 wherein the corrections maintain a decreasing level of luminance over the lifetime of the display **at a rate slower than that of an uncorrected display**.	23. The method claimed in claim 8, wherein the correction signal is calculated to maintain a decreasing level of luminance over the lifetime of the display, but **at a rate slower than that of an uncorrected display**.

Based on the side by side comparison above, it would have been obvious to recognize the claimed limitations of pending application 10/721,124 are similarly disclosed in the copending application 10/ 355,922.

Information Disclosure Statement

4. The information disclosure statements (IDSs) submitted on September 20, 2004 and June 02, 2005 are being considered by the examiner.

Specification

5. The disclosure is objected to because of the following informalities: "After some period" in lines 28-29 of page 5 should read "After some periods".

6. Claims 11 and 20 is objected to because of the following informalities: "corrections" in line 1 should read "correction" for being consistent with the "correction" in line 5 of claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

8. Claims 1-5, 7-8, 10-15, 18-22 and 24 are rejected under 35 U.S.C. 102(a) as being anticipated by Kimura (U.S Patent No. 6,710,548).

In reference to claim 1, Kimura discloses a method for controlling aging compensation in an OLED display having one or more light emitting elements comprising the steps of:

periodically measuring the change in display output to calculate a correction signal (Ameter 107 in Fig. 6, periodically measuring the change in current in the display output to calculate a correction signal in subtraction circuit 126 col. 6, lines 16-25 and col. 10, lines 5-10).

restricting the change in the correction signal at each period (the correction signal from subtraction circuit 126 is inputted as data to comparing circuit 121 to be compared with the data in the acceptable error value register 137 to determined a deviation current range in which voltage is not corrected, i.e. restricting the change in the correction signal; col. 8, lines 50-60).

applying the correction signal to the OLED display to effect a correction in the display output (power supply controlling circuit 122 control the variable power supply 106 based on the inputted correction voltage value, to thereby correct the voltage between power supply lines V1 to Vx and the opposite electrode by the correction voltage value; col. 9, lines 22-29).

In reference to claim 2, Kimura discloses measurement is one or more measurements (of the Ameter 107) from the group including a light output of one or more of the light emitting elements; a current used by one or more of the light emitting elements (col. 6, lines 17-21; col. 10, lines 30-33).

In reference to claim 3, Kimura discloses the correction is restricted to be monotonically increasing (the voltage is corrected as many times as it take for the deviation current reach this range, i.e. monotonically increasing; col. 8, lines 43-48) .

In reference to claim 4, Kimura discloses the correction is restricted to a fixed percentage change in the correction value (the relation between the deviation current and correction voltage, which is stored in the acceptable error value register 127, may be a fixed data, i.e. restricted to a fixed data determined by design of mask or the like, or may be rewritable by a CPU...: col. 9, lines 7-11).

In reference to claim 5, Kimura discloses the correction is restricted to be monotonically increasing and to a fixed percentage change in the correction value (the acceptable error value 127 stores a value for determining a deviation current range in which correction voltage is not necessary. The voltage is corrected as many times as it takes for the deviation current to reach this range, i.e. correction is restricted to be monotonically increasing... In practice, the deviation current continues to experience minute changes due to fluctuation in measurement by the ammeter 107, errors in calculation by the subtraction circuit 126, noise and the like...the acceptable error value register may store a correction voltage value associated with a deviation current value, in addition to the deviation current range in which the voltage is not corrected. The relation between the deviation current and the correction voltage is shown in Fig. 7, which may be a fixed data, i.e. the correction is restricted to a fixed percentage change in the correction value; col. 8, lines 40-68, col. 9, lines 1-11).

In reference to claim 7, Kimura disclose the restrictions change over time (the deviation current experience minutes changes due to fluctuation in measurement by the ammeter, errors in calculation, noises... the acceptable errors value register 127 may stores a correction voltage associated with a deviation current value in which the voltage is not corrected, i.e. the restrictions change over time; col. 8, lines 40-64).

In reference to claim 8, Kimura discloses the correction control signal is one of the voltage applied to each pixel (col. 9, lines 26-29).

In reference to claim 10, Kimura discloses the OLED is an active matrix display (Fig. 1).

In reference to claims 11and 12, Kimura discloses the corrections are applied to groups of light emitting elements (if the light emtiing device is to display and image in color using three types of OLEDs that emit red (R) light, green (G) light, and blue (B) light, respectively, the OLED drive current may be measured for OLEDs of a plurality of colors separately to correct their respective OLED drive voltages; col. 2, lines 48-56).

In reference to claims 13-14, Kimura discloses the groups are spatially distinct groups are colors R, G or B light emitting elements and the groups are spatially distinct groups of light emitting elements (the OLED drive current may be measured for OLEDs of a plurality of colors separately to correct their respective OLED drive voltages. This structure makes it possible to keep the luminance of light of a plurality of colors balanced and display in desired colors when the rate of degradation of organic light emitting layer varies between OLEDs of a plurality of colors; col. 2, lines 52-56).

In reference to claim 15, Kimura discloses the corrections are applied to light emitting elements for difference brightness level (col. 2, lines 55-57).

In reference to claim 18, Kimura discloses the change in display output is measured periodically while the display is in use (the light emitting device of the present invention obtains the measured value and the reference value to correct the OLED current each time a new image is displayed; col. 10, lines 5-9).

In reference to claim 19, Kimura discloses that the period of measuring the change in the display output changes over time (the period requires to measure the current varies depending on the performance of the Ameter 107; col. 6, lines 20-25).

In reference to claim 20, Kimura discloses the correction maintain a constant average luminance output for the display over it life time (the light emitting device of the present invention can keep the OLED drive current constant also when there is a temperature change in the organic light emitting layer by correcting the OLED drive voltage. Therefore the luminance can be kept constantly irrespective of temperature change and an increase in power consumption accompanying temperature rise can be prevented; col. 9, line 65 through col. 10, line 4).

In reference to claim 21, Kimura discloses the correction maintain a decreasing level of luminance over the life time of the display at a rate slower than that of an uncorrected display (the invention of Kimura can keep the OLED drive current constant when the organic light emitting layer is degraded to prevent the luminance from lowering; col. 2, lines 42-46).

In reference to claim 22, Kimura discloses the correction is applied with a look up table (the reference current value register 125 have an ideal OLED current value for each pixel stored therein, look up table for storing reference current value; col. 8, lines 34-35 and Fig. 6).

In reference to claim 24, Kimura discloses the display output is the brightness of the display (the ammeter has first means for measuring the OLED current flowing, in all pixels. While the OLED 105 emits light, the ammeter measure the current thereof; col. 6, lines 16-25).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura (U.S Patent No. 6,710,548) in view of Inukai (U.S Patent No. 7,042,427).

In reference to claim 6, Kimura discloses the Ameter measures the changes from the output of the display and using the measured changes to determined the restrictions (Fig. 6, col. 9, lines 1-20). Kimura does not disclose the step of storing a history of changes in the correction signal. Inukai discloses a measured memory (205) in Fig. 6 for storing a history of changes in correction circuit (203) for storing the measured changes in the correction circuit (col. 7, lines 55-67).

It would have been obvious for one of ordinary skill in the art at the time of the invention to provides the memory (205) to store a history of changes from the output of the display in the device of Kimura as taught by Inukai because it would provide a memory to hold the changes of the measured data to be compared with the reference values thereby the OLED driving voltage in the OLED of each pixel is corrected, and thus, the OLED driving current with a desired size flows (col. 8, lines 5-10 of Inukai).

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura (U.S Patent No 6,710,548) in view of Cok et al. (U.S Patent No. 6,320,325), hereinafter Cok.

In reference to claim 9, Kimura discloses the OLED display is an active matrix display. Kimura does not disclose the OLED display is a passive matrix display. Cok discloses an OLED using display output from the matrix display to compensate the degrade of the OLEDs elements due to using time (col. 3, lines 56-67) by changing the voltage applied to each pixel in the display for both active and passive matrix display devices (col. 5, lines 4-5).

It would have been obvious for one of ordinary skill in the art at the time of the invention to learn the teaching of Cok, i.e. using correction circuit to compensating the degradation for an passive matrix OLED display, in the device of Kimura to improve the operating characteristic and provide flexibility in application (col. 2, lines 37-38 of Cok).

12. Claims 16-17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura (U.S Patent No 6,710,548), hereinafter Kimura 548, in view of Kimura et al. (U.S Patent No. 6,518,962), hereinafter, Kimura 962.

In reference to claim 16, Kimura 548 discloses the measured value and the reference value are obtained to correct the OLED current each time a new image is display. Therefore, a desired gray scale number is obtained for every new image through the correction. However, Kimura 548 does not disclose the change in the display output for the correction is measured at power-up of the display. Kimura 548 discloses the correction of current, including the step of measuring the display output, may be conducted at any time a user desires or may be conducted automatically at a preset time (col. 7, lines 50-60 of Kimura 548). Kimura 962, discloses the correction processing for deterioration over time may be performed at the power up, i.e. the

change in the display output is measured at power-up of display (col. 25, lines 1-10 of Kimura 962).

It would have been obvious for one of ordinary skill in the art at the time of the invention to apply the method performing the correction for deterioration at power up that includes the step of measuring display output at power-up as suggested by Kimura 962 as a user desires as discloses by Kimura 548.

In reference to claim 17, the combination of Kimura 548 and Kimura 962 does not disclose the change in the display output is measured at power-down of the display. However, as discussed above, Kimura 548 discloses the change in the display output is measured periodically, every time the new image is display, Kimura 962 discloses the change is display output is measured at power up. Furthermore, Kimura 548 discloses the correction of current, including the step of measuring the display output, may be conducted at any time a user desires or may be conducted automatically at a preset time (col. 7, lines 50-60 of Kimura 548)

It would have been obvious for one of ordinary skill in the art at the time of the invention to recognize that the measurement of the display output could performed at any time including at power up as suggested by Kimura 962 or as suggested by Kimura 548 including at each time new image is displayed, during display operation, or at any time a user desires (col. 7, lines 50-60 of Kimura 548) including power down time period without bringing any unexpected result or requiring undue experimentation.

13. Claims 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura (U.S Patent No 6,710,548) in view of Tanaka et al. (U.S Patent No 4,443,741), hereinafter Tanaka.

In reference to claim 23, Kimura does not disclose the correction is applied with an amplifier. Tanaka discloses a drive circuit for use with electroluminescent so as to compensate the deterioration of the brightness of the EL element due to its variation with time for providing a constant brightness (col. 1, lines 10-15) in which the correction signal is applied with an amplifier 14 (Fig. 6, col. 4, lines 5-9).

It would have been obvious for one of ordinary skill in the art at the time of the invention to provide the amplifier (14) to the correction circuit of Kimura as taught by Tanaka so that the current through the EL element regains the initial predetermined value to cause the electroluminescent to resume the initial desired brightness (col. 4, lines 5-10 of Tanaka).

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DUC Q DINH whose telephone number is (571) 272-7686. The examiner can normally be reached on Mon-Fri from 8:00.AM-4:00.PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached on (571) 272-7691. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DUC Q DINH
Examiner
Art Unit 2629

DQD
May 26, 2006